

(19) World Intellectual Property  
Organization  
International Bureau



12 APR 2005



(43) International Publication Date  
29 April 2004 (29.04.2004)

PCT

(10) International Publication Number  
**WO 2004/036661 A3**

- (51) International Patent Classification<sup>7</sup>: **H01L 33/00**, C08K 3/00, C08L 77/10, 71/00, 81/06, 79/08 // (C08K 3/00, 3:00, 3:04)
- (21) International Application Number: PCT/US2003/032603
- (22) International Filing Date: 15 October 2003 (15.10.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/418,184 15 October 2002 (15.10.2002) US
- (71) Applicant (for all designated States except US): **SOLVAY ADVANCED POLYMERS, LLC** [US/US]; 4500 McGinnis Ferry Road, Alpharetta, GA 30005 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **BERSTED, Bruce, H.** [US/US]; 880 Ramsden Run, Alpharetta, GA 30022 (US). **SEET, Ernest** [SG/SG]; Solvay Asia Pacific PTE Ltd, 8 Cross Street #24-01, PWC Building, Singapore 048424 (SG). **HSIAO, Eric** [CN/—]; 8F-7, No. 293, WoLung Street, Taipei, Taiwan (TW). **MASSILLON, Henri** [BE/BE]; Solvay Research and Technology Center, Rue de Ransbeck, 310, B-1120 Brussels (BE).
- (74) Agent: **SACHAR, Surinder**; Oblon, Spivak, McClelland, Maier & Neustadt, P.C., 1940 Duke Street, Alexandria, VA 22314 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
- with international search report
  - before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 10 June 2004
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: ANTI-YELLOWING POLYCONDENSATION POLYMER COMPOSITIONS AND ARTICLES

(57) Abstract: A composition, having an improved resistance to yellowing under heat aging, comprising at least 20 weight % of at least one polycondensation polymer having a heat deflection temperature of above 80 °C under a load of 1.82 MPa when measured according to ASTM D648, from 0 to 5 weight % of at least one polymer having a heat deflection temperature of at most 80 °C under a load of 1.82 MPa when measured according to ASTM D648, a white pigment; and a black pigment provides resistance to heat aging induced yellowing. The polycondensation polymers are advantageously selected from the group consisting of polyarylethersulfones, at least partially aromatic polyamides, polyamideimides, liquid crystalline polymers, polyimides, polyetherimides, polyaryletherketones, and polyphenylene sulfides. The polymer composition can be molded to form a variety of articles, including LED components, such as reflectors, reflector cups, and scramblers.

WO 2004/036661 A3

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/32603

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01L33/00 C08K3/00 C08L77/10 C08L71/00 C08L81/06  
C08L79/08  
//(C08K3/00,3:00,3:04)

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C08L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/60009 A (BP AMOCO CORP ; ROCK JOHN A (US)) 12 October 2000 (2000-10-12)  abstract; claims 1-19 page 6 page 12; table 4	1-3,6-8, 10-13, 15,16, 18,19,21
X	EP 0 926 175 A (TORAY INDUSTRIES) 30 June 1999 (1999-06-30) abstract; claims 1-14 page 8, line 48 page 9, lines 14-34 page 11, lines 25-34 page 12, lines 16-50  ----- -/-	1-21

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

19 April 2004

Date of mailing of the international search report

28/04/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Bergmans, K

# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 03/32603

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 6 355 723 B1 (VAN BAAL HARRY ET AL) 12 March 2002 (2002-03-12)</p> <p>abstract; claims 1-29 column 1, lines 7-11,43 column 3, line 17 column 5, line 43 column 6, lines 5-25 column 8; table 1</p>	<p>1-3, 7-16, 18-21</p>
X	<p>WO 00/20510 A (GOERRISSEN HEINER ; BASF AG (DE); WEBER MARTIN (DE); GUENTHERBERG NORB) 13 April 2000 (2000-04-13)</p> <p>abstract; claims 1-10 page 15, line 25 page 21, line 25</p>	<p>1,2,4, 7-16, 18-21</p>
A	<p>US 6 249 271 B1 (ALBERT JONATHAN D ET AL) 19 June 2001 (2001-06-19)</p> <p>abstract; claims 1-24</p>	<p>1-21</p>

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/32603

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0060009	A	12-10-2000	AU 4195300 A 23-10-2000
			EP 1183311 A1 06-03-2002
			WO 0060009 A1 12-10-2000
			US 6482880 B1 19-11-2002
EP 0926175	A	30-06-1999	DE 69818787 D1 13-11-2003
			EP 0926175 A2 30-06-1999
			JP 11263829 A 28-09-1999
			US 6046300 A 04-04-2000
US 6355723	B1	12-03-2002	NONE
WO 0020510	A	13-04-2000	DE 19846244 A1 13-04-2000
			WO 0020510 A1 13-04-2000
			EP 1123351 A1 16-08-2001
			US 6566436 B1 20-05-2003
US 6249271	B1	19-06-2001	US 6262706 B1 17-07-2001
			US 6120588 A 19-09-2000
			US 6124851 A 26-09-2000
			US 2003112491 A1 19-06-2003
			AU 9122598 A 16-03-1999
			AU 9206398 A 16-03-1999
			AU 9207898 A 16-03-1999
			CA 2300827 A1 04-03-1999
			CA 2300830 A1 04-03-1999
			CA 2300849 A1 04-03-1999
			DE 69814410 D1 12-06-2003
			EP 1335211 A2 13-08-2003
			EP 1010035 A1 21-06-2000
			EP 1010036 A1 21-06-2000
			EP 1010037 A1 21-06-2000
			JP 2004500583 T 08-01-2004
			JP 2002504696 T 12-02-2002
			JP 2004500584 T 08-01-2004
			US 2002145792 A1 10-10-2002
			US 2003096113 A1 22-05-2003
			WO 9910767 A1 04-03-1999
			WO 9910768 A1 04-03-1999
			WO 9910769 A1 04-03-1999
			US 6515649 B1 04-02-2003
			US 6120839 A 19-09-2000
			US 6118426 A 12-09-2000
			US 6710540 B1 23-03-2004
			US 6639578 B1 28-10-2003
			US 6459418 B1 01-10-2002
			US 6017584 A 25-01-2000
			US 6664944 B1 16-12-2003
			US 2003037702 A1 27-02-2003
			US 6422687 B1 23-07-2002
			US 6323989 B1 27-11-2001
			US 2004054031 A1 18-03-2004
			AU 726057 B2 26-10-2000
			AU 6955096 A 10-02-1998
			CA 2260947 A1 29-01-1998
			EP 0912913 A1 06-05-1999
			JP 2001500172 T 09-01-2001
			AU 6504296 A 18-02-1997

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/32603

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6249271	B1	EP 0839356 A2	06-05-1998
		JP 11502950 T	09-03-1999
		JP 2002221918 A	09-08-2002
		WO 9704398 A2	06-02-1997
		US 6680725 B1	20-01-2004
		AT 215255 T	15-04-2002
		AU 5224399 A	14-02-2000
		CA 2336744 A1	03-02-2000
		DE 69901120 D1	02-05-2002